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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

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GROUP 1700

Application Number: 09/733,352
Filing Date: December 08, 2000
Appellant(s): BUMGARNER ET AL.

Robert Carlson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 23 May 2005.

6

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows:

This appeal involves claims 1-14, 16-30, 33-37 and 59-60.

Claims 15, 31-32 and 38-58 have been canceled.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. The changes are as follows: The third grounds of rejection is directed to claims 4-12, 23-30 and 33-35; not 13, 11, 18-19 and 21-23 as indicated in the Brief.

WITHDRAWN REJECTIONS

The following grounds of rejection are not presented for review on appeal because they have been withdrawn by the examiner. The rejection of claims 1, 13-16, 20 and 59-60 based on 35 USC 102(b).

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence (e.g., patents, publications, Official Notice, and admitted prior art) relied upon in the rejection of claims under appeal.

4,148,218	KNOWLES et al	4-1979
5,787,216	BICE et al	7-1998
3,711,262	KECK et al	01-1973

«Fundamentals of Physics » HALLIDAY (1981) page 189.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

Art Unit: 1731

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 11, 13-14, 16, 20, 16-22, 36-37 and 59-60 rejected under 35 U.S.C. 103(a) as being unpatentable over Knowles 4148218 (with KECK and HALLIDAY as showing what is disclosed) .

Note: the final rejection refers to a mechanical load cell (i.e. a clutch). To simplify this appeal, that interpretation is no longer maintained. Rather the alternative interpretation (see final rejection, page 2, last paragraph) is relied on here.

Claim 1: A method of screening an optical fiber during a fiber draw process,

See Knowles, col. 3, lines 54-56.

comprising pulling a length of optical fiber from an optical fiber preform

Knowles indirectly discloses the use of a preform via reference to the use of the Keck drawing function. See col. 3, line 49-56 and col. 1, line 19 of Knowles which discloses the invention uses the Keck "drawing function". Figure 1 of Keck shows the preform 10.

imparting a tensile stress to said fiber to thereby test the strength of said fiber

See Knowles, col. 1, lines 6-8.

and subsequent to said imparting a tensile stress, winding said fiber onto a spool,

Knowles does not teach winding the fiber on a spool. Knowles does not discuss what is done with the fiber. However, at col. 3, lines 59-62, of Knowles is evidence that

it was known to wind drawn fiber onto reels. It would have been obvious to wind the Knowles fiber on to a reel/spool, because such is a known practice, to readily contain the fiber.

wherein said tensile stress is imparted to said fiber via a first and second capstan,

See figure 1 of Knowles: 14 is the first capstan and 19 is the second capstan.

The imparting is disclosed at col. 2, lines 59-61.

fiber tension between said capstans is monitored during the draw process via a load cell,

Feature 29 is the load cell (col. 2, line 46) that "indicates" the tension.

Alternatively (using appellant's definition (Brief, page 4, lines 8-9), feature 30 is a load cell (Knowles, col. 2, line 48) because it is a transducer that measures force. It is deemed that Knowles "indicates" is the same thing as the claimed "monitored".

Knowles load cell does not measure the actual tension – however, Appellant's invention does not measure actual tension either.

For example, if Appellant's figure 2 fiber had a tension of 1 lb-force, then the fiber would place a force of 2 lb-force on wheel 22 – because each 'leg' of the fiber would impart 1 lb-force onto the wheel. In other words, the broadest reasonable interpretation of the claimed "monitored" is broader than mere measuring the fiber tension.

and the speed of one of the capstans is adjusted in response to feedback from the load cell about the monitored tension

In simplest terms: Knowles feedback serves to adjust the clutch (col. 3, lines 26-28). If the clutch adjustment serves to transmit less power, then the clutch slips more,

Art Unit: 1731

then the capstan will rotate less quickly (i.e. the speed is reduced), and if the clutch is adjusted to transmit more power, it will slip less, then the capstan will rotate more quickly.

Or, more exactly, from Halliday's "Fundamentals of Physics" equation 12-17:
 $\text{Power} = (\text{torque}) (\text{angular velocity})$. When one changes the Power (and the torque stays constant, Knowles, col. 3 line 28) then the angular velocity would have to change. As an example, if the clutch is rotated at a power of 10 watts and it slippage corresponds to transmitting only 5 watts of the 10 watts, then the other 5 watts would be dissipated (via heat, sound...) via the slippage. But if the power output of the clutch was adjusted to 8 watts, then there would only be 2 watts dissipated, i.e. less slippage and more rotational power transmitted to the capstan.

Col. 2, lines 28-56 of Knowles explains in more detail the workings of how the apparatus functions. Applicants apparatus and the Knowles apparatus work on the same principle – the difference in capstan speeds causes the tension. Thus when one changes the speed, the tension will change. This is not to be confused with Knowles disclosure of constant tensile force. Clearly in both Knowles and the present invention the desired proof tension is a single value – however sometimes the actual tension deviates– so that one must change parameters so that the actually tension reverts to the desired tension. Applicant's preferred embodiment changes the speed directly, and Knowles does it by changing the amount the clutch can slip.

to maintain a desired tensile screening force on said fiber.

This is clearly met.

Examiner notes that the amount of change in speed in Knowles would be very small. However Appellant's specification does not point out how much **the speed of one of the capstans is adjusted**, therefore Examiner has no basis to conclude that the present claims would exclude a very small change in speed. As a hypothetical example, a correction of 10% (of Knowles maximum 100,000 psi , col. 3, line 64): the change in stretch would be in the ball park of 0.1% (assuming the glass has a modulus of elasticity of 10^7 psi) of the length of the fiber – and thus a 0.1% change in speed of the wheels. Likewise, if the actual tension deviates by only 1%, the change in speed would around a 0.01% difference.

Claim 2: it would have been obvious to draw the fiber as fast as possible so as to make as much fiber as fast as possible.

Claims 3, 21-22: it would have been obvious to make the fiber as strong as strong as possible and to proof test it to the high strength level – so that it will not break during usage.

Claim 11: a fiber is suppose to conduct light. IT would have been obvious to make sure that the fiber conducts light through its entire length. It would have been obvious to not remove it from its spool – because of the time involved and possibility of tangling the fiber.

Claim 13: see col 2, lines 33-34.

Claim 14 is clearly met.

Art Unit: 1731

Claim 16: 33 of figure 2 of Knowles is the pulley which is connected (via 11) to the load cell. The fiber contact causes the pulley to rotate because the pulley is an idler wheel (col.3, line16).

Claim 17: There is no disclosure of using a computer. It would have been obvious to have all of the features being connected and/or controlled by a computer so as to easily monitor the process variables, and to store the data so that one can go back and review what went wrong and what went right.

Claims 18-19, 36-37: it would have been obvious to have as much or as little fiber on the spool as desired. **From MPEP 2144.04**

In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976)
("mere scaling up of a prior art process capable of being scaled up, if such were the case, would not establish patentability in a claim to an old process so scaled." 531 F.2d at 1053, 189 USPQ at 148.).

Claim 20 is substantially the same as claim 1 and is obvious for the same reasons.

Claim 23: it would have been obvious to sell the spool of fiber to make money. It would have been further obvious to ship it to the buyers so that they don't have to personally pick it up.

Claims 59-60 are clearly met.

Claims 4-12, 23-30, 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Knowles as applied to claims 1-3, 11, 18-19, 21-23 above, and further in view of Bice 5787216.

Knowles does not disclose the ends being accessed or the optical testing. Bice, starting at col. 1 , line 26, discloses that one of the most important tests is OTDR which requires that the fiber be such that light travels from one end of the fiber (and back). This requires that the light be accessible to both ends of the fiber', because it must travel to the second end if it is to reflect back from that end. The other end can be accessed by light. It would have been obvious to perform OTDR on the Knowles fiber, because it is one of the "most important" tests to make sure the fiber is not damaged.

Claim 5: it would have been obvious to sell the spool of fiber to make money. It would have been further obvious to ship it to the buyers so that they don't have to personally pick it up. This can also be applied to claim 12

The limitations of claims 6-11, 23-30, 33-35 would have been obvious for the reasons given above.

(10) Response to Argument

The arguments regarding the clutch being a mechanical load cell are moot since Knowles is no longer applied in that manner. Rather, the above rejection is based on the 'alternative' rejection of the final rejection.

It is argued that nowhere in Knowles is a load cell used to monitor fiber tension during drawing and then using the feedback to change a speed. The final rejection sets forth (top of page 3) "the feed back of the cell causes the power output to change...which will inherently change /adjust the speed of the capstan". Appellant does

Art Unit: 1731

not appear to address this. Appellant's arguments seem to be directed solely to the clutch being the load cell.

Whereas Appellant argues that the final rejection indicates Knowles does not monitor the tension, such is not convincing. The relevant portion (penultimate sentence of page 3 of Final rejection) states that the Knowles does not readily teach monitoring; this is quite different from "does not teach". Examiner apologizes for the poor choice of words. Nevertheless, the rejection indicates that Knowles does monitor the tension. Appellant does not give any indication as to why Knowles use of the load cell to indicate the tension does not read on the claimed "monitoring" of the tension.

Regarding claims 16, (and 34) Appellant disagrees with Examiner's position that feature 33 of Knowles is connected to the load cell via 11. Appellant's position appears to be that Examiner's interpretation of "connection" is too broad – and that everything on the planet would be connected that way. Rather (it is argued) Examiner should have interpreted the claim to be limited to a connection where the load cell can monitor tension of the fiber via contact with the pulley. This is not convincing because although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

From *In re Bigio*, __ F.3d __ (Fed. Cir. August 24, 2004)

"...this court counsels the PTO to avoid the temptation to limit broad claim terms solely on the basis of specification passages. *In re Zletz*, 893 F.2d 319, 321 (Fed. Cir. 1989). Absent claim language carrying a narrow meaning, the PTO should only limit the claim based on the specification or prosecution history when those sources expressly disclaim the broader definition. See, e.g., *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358

Art Unit: 1731

F.3d 898, 906-09 (Fed. Cir. 2004) (explaining requirement for an express disclaimer in either the specification or prosecution history)."

Regarding claims 59-60 it is argued that Knowles does not have electronic monitoring. This is not convincing, given that Appellant argues on page 4 (lines 9-10) of the Brief that "load cells convert weight or force into electrical signals". Clearly Knowles load cell 29 is a electronic device since it creates electric signals.

Regarding claim 2 it is argued that it would not be obvious to draw fiber as fast as possible. As Examiner understands the argument, that if one pulls the fiber as possible, there would be little or no torque (sic, tension?) applied to the fiber. This is assertion with no evidence to support it. Examiner finds it unfathomable to think that a clutch, pulleys, load cells, capstans, etc. cannot work at speeds over 20 m/s – or that one or routine skill could not fabricate a clutch, pulley, etc. that can operate at those speeds.

As to claim 17, it is argued that references do not teach using computer control. It is noted that Applicant does not indicate that such would not have been an obvious invention. Nor is there any indication that Applicant obtains an significant result or uses a particular computer. Rather the present specification gives minor discussion as to the use of a computer – which indicates that the use of a computer to control processes is a routine expedient.

III. AUTOMATING A MANUAL ACTIVITY

In re Venner, 262 F.2d 91, 95, 120 USPQ 193, 194 (CCPA 1958) (Appellant argued that claims to a permanent mold casting apparatus for molding trunk pistons were allowable over the prior art because the claimed invention combined "old permanent-mold structures together with a timer and solenoid which automatically actuates the known pressure valve system to release the inner core after a predetermined time has elapsed." The court held that broadly providing an automatic or mechanical means to replace a manual activity which accomplished the same result is not sufficient to distinguish over the prior art.).

Regarding claim 4 it is argued that applicant actually meant that both ends of the fiber to be mechanically accessed (i.e. not optically accessed). As indicated above, limitations are based on what is actually claimed, not what is meant by applicant. In such circumstances the burden is on applicant to clarify the claims to more accurately describe what was meant.

The PTO gives a disputed claim term its broadest reasonable interpretation during patent prosecution. Hyatt, 211 F.3d at 1372. The "broadest reasonable interpretation" rule recognizes that "before a patent is granted the claims are readily amended as part of the examination process." Burlington Indus. v. Quigg, 822 F.2d 1581, 1583 (Fed. Cir. 1987). Thus, a patent applicant has the opportunity and responsibility to remove any ambiguity in claim term meaning by amending the application. In re Prater, 415 F.2d 1393, 1404-05 (CCPA 1969). Additionally, the broadest reasonable interpretation rule "serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified." In re Am. Acad. of Sci. Tech. Ctr., 367 F.3d 1359, 1364 (Fed. Cir. 2004) (quoting In re Yamamoto, 740 F.2d 1569, 1571-72 (Fed. Cir. 1984)).

Moreover, it is noted that Appellant has not even argued that mechanically exposing both ends of the fiber (i.e. the disclosed invention) is a new or unobvious modification. It is presumed that what was meant was a very common practice in other fiber processes – and applicant merely applied it to the proof testing.

Claim 33: it is argued that Knowles does not have a load cell which is operatively connected to the fiber. The only way this could be accurate is if Applicant is using some very specialized definition of "operatively connected" that is not of record. Such a definition would appear to be improper. Clearly all of the features in the Knowles

Art Unit: 1731

invention operate in connection to create an optical fiber – thus everything is operatively connected.

The PTO gives a disputed claim term its broadest reasonable interpretation during patent prosecution. Hyatt, 211 F.3d at 1372. The “broadest reasonable interpretation” rule recognizes that “before a patent is granted the claims are readily amended as part of the examination process.” Burlington Indus. v. Quigg, 822 F.2d 1581, 1583 (Fed. Cir. 1987). Thus, a patent applicant has the opportunity and responsibility to remove any ambiguity in claim term meaning by amending the application. In re Prater, 415 F.2d 1393, 1404-05 (CCPA 1969). Additionally, the broadest reasonable interpretation rule “serves the public interest by reducing the possibility that claims, finally allowed, will be given broader scope than is justified.” In re Am. Acad. of Sci. Tech. Ctr., 367 F.3d 1359, 1364 (Fed. Cir. 2004) (quoting In re Yamamoto, 740 F.2d 1569, 1571-72 (Fed. Cir. 1984)).

Examiner realizes that the above broadest reasonable interpretation may not be completely “reasonable”, however there does not appear to be any interpretation which is clearly completely reasonable. If Applicant considers the broad interpretation to be unreasonable and Applicant does not wish to exercise the “*opportunity and responsibility to remove any ambiguity in claim term meaning by amending the application*”, then Applicant should point out why the Office’s interpretation is not the “broadest reasonable”, what the broadest reasonable interpretation is, and preferably point out why it is reasonable. Mere argument that the Office’s interpretation is incorrect (and giving no guidance/suggestion as to what the correct interpretation is) will likely be deemed as non-responsive.

Art Unit: 1731

As to the newly presented American Heritage Dictionary definition – such does not appear to be timely submitted. Nevertheless – Examiner cannot see how such a definition serves to define over Knowles. Moreover, it is unclear as to which definition Appellant is asserting is the proper one. Is either 'monitoring' appropriate? Or are the claims limited to monitoring that encompasses both definitions – but excludes those types of monitoring which meet only one of the two definitions. Examiner is not aware of any Office policy or case law that permits a term to have more than one definition – nor a term to be some sort of hybrid of two definitions.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,


JOHN HOFFMANN
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8-5-05

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The rotation of a rigid body about a fixed axis (to which $\tau = I\alpha$ applies) is not the most general kind of rotary motion; the body may not be rigid and the axis may not be fixed in an inertial reference frame. In this general case Eq. 12-10 or $\tau_{\text{ext}} = dL/dt$, applies. In the rest of this chapter, however, we consider only the case of a rigid body rotating about a fixed axis.

As the resultant torque τ continues to act on the rigid body of Fig. 12-7 (or 12-9), it changes (let us say, increases) the kinetic energy K of the body. We can find the rate P at which energy is delivered to the rotating body by the torque from (see Eq. 12-12)

$$P = \frac{dK}{dt} = \frac{d}{dt} \left(\frac{1}{2} I \omega^2 \right) = I \omega \frac{d\omega}{dt} = I \omega \alpha.$$

But $I\alpha$ is just the torque τ , so that the power P is

$$P = \tau \omega. \quad (12-17)$$

Power—rigid body with fixed axis

This is the rotational analog of the relation $P = Fv$, which describes the rate at which kinetic energy is delivered to a rigid body moving in translational motion in a fixed direction.

Instead of the power we may want to know the work W done by the resultant torque as the rigid body rotates from an initial angular position θ_i to a final position θ_f . We find it from Eq. 12-17, or

$$W = \int P dt = \int \tau \omega dt = \int \tau \left(\frac{d\theta}{dt} \right) dt$$

or

$$W = \int_{\theta_i}^{\theta_f} \tau d\theta. \quad (12-18)$$

Work—rigid body with fixed axis

If the torque is constant, this relation reduces to

$$W = \tau(\theta_f - \theta_i). \quad (12-19)$$

Equation 12-18 is the rotational analog of $W = \int F dx$, the work done by a force F acting on a rigid body in translational motion in a fixed direction.

In Table 12-2 we summarize the definitions and equations that we have developed here for the rotational motion of a rigid body about a fixed axis. Notice how exactly analogous they are to the corresponding linear equations for the translational motion of a rigid body in a fixed direction; see also Table 11-1.

Table 12-2 Some corresponding relations for translational and rotational motion

Translational motion (fixed direction)		Rotational motion (fixed axis)	
Displacement	x	Angular displacement	θ
Velocity	$v = \frac{dx}{dt}$	Angular velocity	$\omega = \frac{d\theta}{dt}$
Acceleration	$a = \frac{dv}{dt}$	Angular acceleration	$\alpha = \frac{d\omega}{dt}$
Mass (translational inertia)	M	Rotational inertia	I
Force	$F = Ma$	Torque	$\tau = I\alpha$
Work	$W = \int F dx$	Work	$W = \int \tau d\theta$
Kinetic energy	$\frac{1}{2} M v^2$	Kinetic energy	$\frac{1}{2} I \omega^2$
Power	$P = Fv$	Power	$P = \tau \omega$
Linear momentum	Mv	Angular momentum	$I\omega$